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Executive Analysis of Fire Service Operation in Emergency Management

Assessing the Impact of Employee Absenteeism on Emergency Operations during a Pandemic

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

Signed: _____

Abstract

The problem was that the Mason City Fire Department (MCFD) did not have a plan to deal with expected employee absenteeism during a pandemic. The purpose of the research was to identify staffing alternatives to ensure continuity of operations during a pandemic. Descriptive research was used to answer research questions addressing the expected impact on MCFD operations if only a percentage of employees resorted to duty, if the protection of immediate family members played a role in staff absenteeism, pandemic response plans available locally and regionally and various community resources available to compensate for staff shortages. Internal and external surveys were completed, which determined that a majority of MCFD staff would not attend work if family members were at home sick. The ability to protect responders families during a pandemic resulted in substantially higher attendance, although few departments were logistically able to accomidate staff and their families. Local efforts to deal with a pandemic included assistance from local elected officials and legislators, and identification and planning of local and regional community resources to respond to staffing shortages were identified. Coordination with local schools and hospitals assisted local emergency planners with the diversion of multiple patients and field triage sites.

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Introduction

As the movie ends, you drive home from the theatre recalling the events of the dramatic script. Martial law was in effect, and thousands were huddled into make-shift confinement camps. An infrastructure breakdown had occurred and looting and fires burned throughout the town. Sirens wailed and people screamed. Rescuers with masks covering their face attended to the dead and dying, and it seemed that apocalypse was at hand. It's a good thing things like that only occur in the movies...right?

A pandemic is on the horizon, and the World Health Organization states it is "inevitable and possibly imminent" (Barnett, D. J., Balicer, R. D., Lucey, D. R., Everly, G. S., Jr, Omer, S. B., & Steinhoff, M. C. et al. 2006). Data suggests that during a pandemic, nearly half of all public health workers are not likely to report for work and two-thirds perceive themselves at risk while performing their duties during such an event (Balicier, Omer, Barnett, & Everly, Jr, 2006). In the event that one of those healthcare providers is infected, there is over a 50% mortality rate (Ludwig, 2005, p.1).

The problem is that the Mason City Fire Department (MCFD) does not have an operations plan to deal with employee absenteeism during a pandemic emergency, which could result in catastrophic effects to the MCFD response area and north-central Iowa. The purpose of this research is to identify staffing alternatives to ensure continuity of operations during a pandemic while utilizing contingency plans to deal with large scale employee absenteeism. Descriptive research will be used to answer (a) what will be the expected impact on MCFD operations if only a percentage of scheduled employees attend work during a pandemic, (b) what role will the ability to protect the family members of MCFD staff play with attendance and

emergency response capabilities of MCFD during a pandemic, (c) what similar pandemic response plans are currently utilized by other area response agencies and (d) what different community resources are available to compensate for the loss of mission-critical personnel during a pandemic emergency. Initially, interviews will be conducted with the Director of the Cerro Gordo Department of Public Health, who has done extensive research on pandemic preparation and has authored a pandemic plan that has been used as a model nationally for pandemic emergencies, as well as the Emergency Management Director of Cerro Gordo County, who has worked hand-in-hand with local public health. Secondly, a comprehensive examination of pandemic operational guidelines from local, state and federal agencies will be conducted, as well as current professional journal recommendations and initiatives. Lastly, an internal and external survey instrument will be utilized to determine MCFD employee intention regarding response during a pandemic, as well as other response agency's operational guidelines and contingencies for employee staffing issues during pandemic response.

Background and Significance

The Mason City Fire Department is the largest career fire department in north-central Iowa, employing 44 sworn personnel and a civilian clerk, and is Local 41 of the International Association of Firefighters. Mason City is a regional retail, medical and industrial hub with a indigenous population of 26, 000 expanding to a daytime total of 60,000 and is perhaps best known as the birthplace of Meredith Wilson, of “The Music Man” fame. Mason City is also

adjacent to Clear Lake, Iowa and the famous Surf Ballroom, which served as the final audience for Buddy Holly, J.P Richardson and Ritchie Valens before their fatal plane crash.

MCFD is responsible for fire suppression to Mason City proper and the immediate area adjacent to its boundaries, as well as providing advanced life support (ALS) to Mason City and Cerro Gordo and Worth counties in Iowa, a total response area of over 750 square miles. With that said, it is not uncommon to endure a 45 minute response time from the northern and southern boundary. MCFD also houses and maintains a hazardous material / technical rescue team which responds to a nine-county area of Iowa. In 2005, MCFD responded to over 5,000 EMS assignments and 1,000 fire assignments from fire headquarters in Mason City. MCFD is composed of 3 battalions of 13 firefighters, with a support and administrative staff compliment of 6. During each 24-hour shift, MCFD staffs 2 ALS engine companies, a truck company and 2 medical companies and responds to an average of 14 alarms each shift. MCFD also proudly boasts being named the Iowa career EMS service of the year for 2007 by the Iowa EMS Association, an admirable distinction considering MCFD has only provided EMS full-time since 2004.

Since MCFD provides EMS coverage for such a large area of Iowa, it only emphasizes the need for a well-developed and practical pandemic action plan. Staffing shortages at MCFD are certain to affect not only Mason City, but their entire coverage area as well. Locally, the Cerro Gordo Department of Public Health has authored a pandemic response plan that is very complete and has been requested by fellow agencies to use as a template for their planning needs. MCFD has been included in this county plan, but unfortunately MCFD has not developed

a specific plan to deal with personnel shortages in the event of a pandemic. It is only as a result of a comprehensive and well-rehearsed contingency plan within MCFD that significant shortfalls regarding staffing can be arrested, and countless lives saved by prompt and competent emergency care.

Knowing how fast a flu pandemic could strike and the ability for the virus to travel around the globe, along with the health risks to firefighters supports the research of this topic based on two of the United States Fire Administration operational objectives. Those two objectives are: to promote within communities a comprehensive, multi-hazard risk reduction plan led by the fire service organization; and to respond appropriately in a timely manner to emerging issues (National Fire Academy, 2003).

The thought of an influenza pandemic to some may be unimaginable, but there is evidence that would confirm that we are on the brink of a major event. There is also a direct correlation between the problem identified and The Executive Development Course of the Executive Fire Officer Program. One of the Executive Development course goals is to provide the executive fire officer with an opportunity to use research to solve real-world problems in their work environments (United States Fire Administration, 2006).

Literature Review

Several influenza pandemics have occurred during the twentieth century, and all have spread within one year of being detected. The Spanish flu in 1918-1919 caused 500,000 casualties in the United States and 50 million worldwide. Nearly one-half of those that died

were young, healthy adults that died within the first few days following infection. The Asian flu in 1957 accounted for 70,000 deaths in the United States and the Hong Kong flu in 1968 took the lives of 34,000 Americans (Ludwig, 2005). Currier stated that during the 1918 influenza outbreak in the Midwest, infected swine were identified at the National Swine Breeders Show in Cedar Rapids, Iowa on September 30, 1918 and it is believed that this is where the influenza derived the “swine flu” title. Currier also identified Haskell County, Kansas as the probable birthplace of the swine flu, which illustrated that the swine influenza presented clinically similar to the human strains and coincidentally presented at the same time as the human epidemic (Currier, 2005).

Historically, transmission of pathogenic organisms from animal hosts to humans has been well documented since several thousands of years before Christ. Rabies has spread from wild animals to humans as early as 2,300 B.C. and it has been suggested that Alexander the Great died from the West Nile Virus after acquiring encephalitis in 323 B.C. (Dittmar, 2005).

Specifically, the H5N1 strain of influenza, better known as the “bird flu” following its preferred bird and poultry transmission vector seems to be in the process of adapting to humans, and engaging in the same mutation process as what has been recorded historically. Current data suggests that this strain of the H5N1 influenza is even more deadly to humans than the 1997 Hong Kong influenza. The World Health Organization has identified this strain of influenza as an immediate and lethal threat to humans and has identified potential transmission routes through many different types of animals, including the domestic house cat. This information is particularly worrisome given the number of domestic cats in the United States and their close interaction with humans (Barnett, 2005).

Another vehicle for the spread of the H5N1 influenza is the advent of international and domestic airline travel. Brownstein concluded that empirical evidence exists that airline travel can readily spread influenza both domestically and internationally, and that certain airline travel restrictions may have a possible benefit on the transmission of influenza by passengers (Brownstein, 2006). Current predictions by domestic and international public health experts suggest that the H5N1 influenza threat is imminent and absolutely credible. Current pandemic models suggest that a mild pandemic, similar to the 1968 Hong Kong influenza, would equate to a present-day death toll of 1.4 million people and a cost of \$330 billion dollars. The same model suggests that an influenza pandemic similar to the 1918 influenza could potentially kill 142 million people and accrue costs exceeding \$4.4 trillion dollars (Osterholm, 2007).

The likelihood of emergency responders to report for work, realizing that if they contract the H5N1 virus they face better than a 50% chance of dying, is a force to be reckoned with. Certain limitations were encountered during the literature search regarding how employees would act during a pandemic due to the lack of modern empirical data and the lack of a pandemic emergency for over 40 years.

Similar studies have been posed to employees regarding their response to a multiple casualty incident (MCI) and experts tend to derive many of the similarities of pandemic response from these models. Since an MCI requires emergency responders to attend emergency scenes outside of their normal working hours, and poses certain personal risk it is presumed by employers that the employee will feel a duty to act and respond to the emergency, despite family obligations, type of incident or availability of treatment. Syrett suggested that as a catastrophic event develops, fewer responders are likely to report for work. Additionally, it was shown

during this study that a major decision point whether to report for work or not was the causative agent for the emergency (Syrett, 2007).

Literature suggests that several factors present themselves during a pandemic emergency, prohibiting employees from reporting to work. Estimates suggest a 30-50% employee absenteeism rate among emergency providers during a pandemic, which mirrors the national rate of non-emergency care employees. Many emergency responders will be ill themselves, while others will be reluctant to report for work due to sick family members and responsibilities at home. Still others will choose not to show up out of fear (Powers, 2007). Literature was also quick to point out that during a pandemic, absenteeism is likely to be higher and more prolonged than during other emergencies. It is suggested that a severe flu pandemic would infect nearly 90 million Americans and require employees to miss work for up to three weeks. This does not include family members staying at home to care for ill family members (Peterka, 2007).

Glenn was quick to point out that when a pandemic occurs, it is not only emergency care employees that will not report for duty. Suddenly, the likelihood of local infrastructure collapse and the drawbacks of a “just in time” society will be profound. This means that not only EMS and fire will see a potential 50% absenteeism, but also the same rate at the local grocery store, school and hospital (Glenn, 2007). Glenn goes on to suggest that employers adapt social distancing procedures and work from home if possible.

Communication challenges and technology shortfalls are also expected to occur. The common denominator in the technology and communication workforce is still people, and Zirkel suggests that organizations can expect extended high rates of absenteeism and a dispersed employee base, as well as an overloaded public infrastructure (Zirkel, 2007). State organizations have also investigated employee absenteeism at the state level with regards to information

technology. Information technology experts agree that employee absenteeism within their framework will result in infrastructure and procedural breakdowns, and their leaders need to plan accordingly. They went on to point out that, for the most part, state-level information technology has not taken the necessary steps to implement and test plans to cope with a pandemic (NASCIO, 2007). Employee absenteeism can depend on a series of personal and professional obligatory trends and practices. Moral obligations, professional obligations and contractual obligations all present unique challenges to the employee during a pandemic emergency and should be taken into consideration. Judgments about the scope of an employee's moral obligations, for example, should take into account several factors. Examples of these factors include the urgency of the need for that individuals services and the difficulty of replacing that employee, the risks to the worker and the existence of competing moral obligations, such as family responsibilities and their obligation to care for future patients.

Another study by Balicer reported that nearly half of local health department workers are likely not to report for work during a pandemic emergency. This perceived risk was shown to be associated with several peripheral events not particularly associated with the hazard of the event, but during the study it was concluded that 66% percent of respondents perceived themselves at personal risk while performing their duties during the event (Balicir, 2006). Onandaga County suggests that they will see a high rate of employee absenteeism within their county infrastructure, and that it will affect every sector and every part of the county (Onandaga, 2007).

Finally, Qureshi suggests that the most frequently cited reason for employee absenteeism during a disaster was the fear and concern for themselves and their family. The study went on to identify factors relating to employee absenteeism. Fear and concern for family members accounted for nearly half of the barriers for employee attendance related to the employees'

willingness to report for work, while transportation issues and childcare represented the majority of employee concerns related to the *ability* to report for work (Qureshi, 2006). Barnett also reminded public health entities that readiness training for public health workers should also address the employees' risk perceptions toward emergencies, not just the procedural elements of their response roles (Barnett, 2006).

Procedures

To begin to answer the research questions outlined previously a number of steps were taken. First, a comprehensive literature review process was undertaken to gain an understanding of the problem and to assimilate background information to direct the project. The literature review was conducted at the National Fire Academy at Emmitsburg, Maryland in their Learning Resource Center. Materials obtained at the Learning Resource Center were compiled on-site in Emmitsburg and were used in addition to materials found at the Mason City Public Library in Mason City, Iowa.

An internal MCFD survey instrument was designed using Microsoft Word 2007 (Appendix A) and was presented to the command staff at the Mason City Fire Department for their review and comment. It was desired that additional representatives from local emergency response agencies would be included in the review of the survey, but several weather issues and employee schedules did not allow this to happen. The MCFD command staff consists of the Fire Chief, who is a 2000 graduate of the Executive Fire Officer program, a Deputy Chief who also serves as the department fire marshal, a Deputy Chief that is the MCFD operations chief and a Captain that serves as the MCFD training officer. The entire command staff was included in the

survey review to best facilitate buy-in from all facets of emergency operations at MCFD.

Participants were reassured that the survey would be anonymous in nature, and would be utilized in the completion of an executive fire officer applied research project. The survey was printed and distributed to 44 MCFD staff members, which represents the entire sworn staff at MCFD. The survey was presented to the MCFD staff in written form, due to the inaccessibility of all staff to electronic mail. The two additional civilian employees, the administrative assistant and the EMS billing clerk were not included in this process. A time frame of one week was given for survey response. Each response was folded and sealed in an envelope and placed in the EMS mailbox after completion.

A short bulleted list (Appendix B) of nine items was included with each survey to present each respondent with consistent and relevant materials related to an influenza pandemic as well as probable consequences they could expect as a result of a pandemic emergency locally. Examples of these items included the presumed mortality rate to be expected by responders who contracted the H5N1 virus, local death rates within the county, local infrastructure conditions during a pandemic, social distancing and quarantine recommendations and demographics regarding the H5N1 specifically. The questions were designed to answer the first two of four research questions regarding employee absenteeism at MCFD during a pandemic emergency and the continuity of operations, as well as what roles MCFD could play to encourage employee attendance.

The survey contained 10 questions that were specific in nature and designed to be short and to the point, and participants were allowed to answer the question with a simple “yes or no” response. Questions at the beginning of the survey were designed to answer specific questions related to each employee’s personal decision whether or not to report to work during a pandemic

emergency. Question 2 included an “off-shift” scenario, which is mandatory overtime at MCFD. Essentially, if a MCFD employee is “off-shifted”, they must report to work unless they are ill or intoxicated. Questions 4 and 5 addressed social distancing and quarantine factors, while question 7 addressed personal protective equipment and the employee’s perceived ability to protect themselves with this equipment. Question 8 included a “not applicable” response choice for the participant that did not have children. Finally, the last two questions identified additional personal options that the employee would have at their disposal when deciding whether or not to report to work. The questions on this survey were specifically arranged in such an order that the participant could not arrange or group the questions and pre judge the next question. Each survey was presented to each staff member in a sealed envelope, and an additional envelope was included for the completed survey, and all members were instructed to complete the survey individually to try to discourage a “group think” effect on their ability to answer the questions.

Secondly, an external survey (Appendix C) was used to answer the last two research questions regarding similar pandemic plans regarding employee absenteeism and pandemic response. A total of 10 career fire departments in Iowa that have emergency medical services responsibilities and are similar in size to MCFD were contacted by telephone and respondents were asked specific questions listed on the survey. Answers were recorded immediately as the questions were asked. Additionally, a personal interview was conducted with Mr. Ron Osterholm, Director of the Cerro Gordo County Department of Public Health who is regarded as an expert on pandemic flu preparation and operations. Mr. Osterholm is coincidentally the brother of Dr. Michael Osterholm, who is an international expert in public health and pandemic mitigation and a reference cited in this document. An abbreviated curriculum vitae illustrating Mr. Osterholm’s credentials can be found under Appendix D at the end of this document. This

personal communication occurred in his office at the Cerro Gordo County Department of Public Health on February 18, 2008 and a list of the questions posed to Mr. Osterholm can be found as Appendix E at the end of this document. A second interview was completed by telephone on February 27, 2008 with Mr. Steven O'Neil, who directs the county emergency management office in Mason City, Iowa. Mr. O'Neil has worked very closely with local and regional authorities on the development of planning initiatives for a pandemic emergency, and curriculum vitae with Mr. O'Neil's credentials can be found as Appendix F at the end of this document. A list of the questions directed to Mr. O'Neil can be found at the end of this document as Appendix G.

Results

Of the 44 surveys sent to staff at the Mason City Fire Department, 34 surveys were completed and returned within the stated time frame, which resulted in a 77.2% return rate. Results from this survey can be found as Appendix H at the end of this document. Survey results indicated that all levels of the fire department participated, from firefighter/paramedics to the command staff. Length of department tenure ranged in scope from 1 year to 37 years. As previously stated, the internal survey was designed to answer the first two research questions listed in the introduction, concerning employee absenteeism and what affect that absenteeism would have on operations at MCFD, as well as what the affect would be on employee absenteeism if provisions could be made to protect family members while the employee remained on-duty.

As participants made their way through the internal survey, several questions were posed regarding their willingness to report to work at MCFD during a pandemic emergency. When asked if they would attend their regularly scheduled shift, 28 participants, or 82.4 % indicated that they would report for work as scheduled, despite the pandemic. The same participants were asked if they were subjected to mandatory overtime, and were not regularly scheduled to attend work would they respond. In response, 27 staff (79.4 %) said they would respond under a mandatory order. Similarly, 24 respondents (70.5 %) stated they would take extra overtime shifts during a pandemic emergency. Participants were also asked questions of a more personal nature regarding patient care. Survey participants indicated that they felt they were at some degree of personal risk while treating suspected patients with the Avian Flu 97 % of the time, and stated that if they were forced to treat the same patient, 85.2 % of responders, or 29 respondents would provide treatment, despite the associated risk perception. Finally, 33 participants, or 97 % indicated that they would be willing to wear personal protective equipment, including specialized breathing and filtered devices for extended times during their shift in the event of a pandemic.

When family issues were introduced into the survey, a series of four questions illustrated the participants willingness to remain on duty despite family obligations and ill family members. When participants were asked if they would report to work, despite having family members at home who were ill, 24 (70.6 %) said they would remain home and not report for duty. When faced with a pandemic emergency lasting several weeks and responders forced to remain in quarantine at the fire station and away from family members, 20 (58.8 %) stated they would refuse to be away from family members. If provisions were made to house family members at the station and keep them quarantined with the respondents, 28 (82.3 %) stated they would be

willing to remain at the station with their family. Finally, the participants were asked if provisions were made to house their children at a secure location free from the hazards of a pandemic, would they respond to work as scheduled. In response, 14 (41.1 %) said they would be willing to attend work if their children were safe.

The external telephone survey that was presented to regional fire departments was designed to answer the final two research questions, specifically regarding pandemic response plans and community resources available during a pandemic. A total of eight surveys were completed by telephone during normal working hours, and all respondents were at least a company-level officer in the department. The survey was a series of questions dealing with departmental practices and policy regarding pandemic response, as well as mission-critical shortage contingencies. When departments were asked if they had a formal response plan for a pandemic emergency, 2 departments (25%) stated they had formal pandemic planning in place. When asked if their department had participated in formal pandemic training, five of the eight departments (62.5%) stated that they had. All departments (100%) surveyed stated that they expect staffing shortages during a pandemic emergency and when asked if they had emergency mandatory call back procedures in place to recall staff during a pandemic, every department, or 100% of respondents stated they had such plans at their disposal, and would use them during a pandemic.

Respondents were asked if they maintain communication with their local public health department regarding pandemic emergencies and planning, and 6 of the 8 departments (75%) stated that they have regular communication with these resources. Three of eight respondents (37.5%) stated they maintain an inventory of personal protective equipment to deal with a pandemic emergency and half of the respondents (50%) stated they have provisions in place to

deal with staffing shortages of key responding personnel. When respondents were asked if they have designated key infrastructure resources and other caches of food, fuel, etc. to utilize during a pandemic emergency, only one of the eight departments (12.5%) stated that they had these measures in place locally. Respondents were also asked if they had the resources to house their entire staff in quarters when faced with quarantine measures during a pandemic, and half (50%) stated they did have these resources available to them. The second part of that question asked the participants if they had the same resources to house family members of responders in quarters concurrently with staff, to which one department (12.5%) stated that they had these resources. The final question on the external survey dealt with the respondent's perception of how staffing shortages of 30-40% would affect daily operations of their agency. Seven of the eight respondents (87.5%) stated that such a shortage would create catastrophic hardships on their ability to stay in operation during a pandemic. The most common approach mentioned to keep their crews in service was the reduction, or elimination of non-critical services, such as inspections, permit issuance and fire prevention activities. Another common solution from departments that complete intra-facility transports out of town was to have the patients remain in town and not proceed past their primary response area. Three departments (37.5%) stated that they would not respond to automatic fire alarms with multiple apparatus, and would not initiate any suppression measures on buildings that were verified as being vacant.

A series of interviews were conducted to identify possible community resources available to recompense for the loss of mission-critical personnel during a pandemic emergency, focusing on the fourth research question. When asked what measures are in place from an emergency management perspective regarding the backfill of mission-critical staff during a pandemic emergency, a common theme developed between the responses of the interviewees and the

sources found in literature. Certain planning has been completed to involve retirees that may hold medical credentials to assume the roles of emergency medical staff that are unable, or elect not to report to work. Secondly, an initiative has been started to involve legislators in a proposal to mandate that these same individuals assist efforts by stepping into the roles of the rescuers.

Another role that the legislators have been asked to play is the ability of emergency medical responders to provide care outside of their normal scope of practice, waiving current regulations found within chapter 147 of the Code of Iowa. Such legislation would allow basic providers to assume many of the same roles that advanced providers might play following a brief, specific training period. Advanced EMS providers would also be able to receive training outside of their scope, allowing them to perform nursing or other emergency procedures that would normally be reserved for physicians or physician extenders. Similar regulations would allow nurses to operate outside of their scope of practice, allowing them to administer to more patients at once than allowed to by law. It was pointed out throughout the interview that this legislation would not only provide beneficial results during a pandemic emergency, but during any mass casualty scenario where multiple patient encounters may develop.

Local emergency management representatives have contacted various non-profit and volunteer agencies regarding staffing shortages and their desire, as well as their ability, to provide staffing assistance during a pandemic emergency. Results from these meetings have identified their reluctance to provide staff as they would be in much the same situation, losing their own volunteer staff due to the effects of a pandemic and unable to fulfill their own missions.

Local public health officials agreed that a pandemic emergency could jeopardize essential community services by causing high levels of employee absenteeism in *every* workplace, not

only emergency services. In the event of a pandemic, local mutual aid resources cannot be relied upon and state and federal resources will not be immediately available due to the immediate nature of the illness and the large populations that will encounter the illness. Secondly, local healthcare systems, as well as regional facilities will be severely affected with a surge of patients, as well as decreased staff positions. Currently, a process is in place to identify alternate sites to relieve the demand on local emergency departments. Identifiable alternatives may include field triage sites, or local schools, since the likelihood exists that a pandemic emergency would force schools to close.

Significant disruptions in public and privately-owned infrastructure such as transportation, commerce, communication, utilities and agriculture have been identified by local public health authorities, and the Cerro Gordo Department of Public Health has worked with community partners to enhance community capacity for response to a pandemic emergency. An initiative has also been placed into service that will educate government agencies, non-profit agencies and local business leaders that may provide community services locally during a pandemic emergency.

Discussion

All sources have identified the certain and immanent nature of an influenza pandemic and research has demonstrated that a pandemic emergency is not only historically accurate, but perhaps on the horizon. Historical sources have also been quick to point out that should a pandemic occur, or perhaps when it *does* occur, the results will most likely be catastrophic. Despite the horrific projections of casualties and infrastructure collapse by the experts, there remains a discrepancy in preparation and confusion by emergency responders regarding their

specific actions should such an emergency occur, especially interesting given the geographical nature of Iowa as an agricultural state and the history of the avian flu's disposition to birds and fowl, as well as predisposition to swine.

Trends illustrated in current literature were mirrored by responses from local and state emergency care providers regarding their preparedness and contingencies regarding staffing shortages and continuity of emergency operations not only during pandemic emergencies, but multiple casualty incidents as well. As literature suggests, emergency workers are sometimes reluctant to respond to emergencies outside of their normal working hours, and their likelihood to respond at all seems to be directly related to their perceived level of risk regarding the emergency incident. Furthermore, it has been presumed by employers that the employee will feel a duty to act and have a sense of moral obligation, therefore responding to emergencies despite personal risk. Literature suggested that employers could expect a 30-50% absenteeism rate by staff during a pandemic emergency, and emergency response staff fell within this percentage as well. Statistics presented in literature sources stated that a pandemic would infect nearly 90 million Americans, and employers could expect staff shortages for up to three weeks during a pandemic. Other concerns, such as local infrastructure collapse and procedural breakdowns were also identified. Literature identified that two-thirds of emergency workers perceived themselves at personal risk during a pandemic, and fear and concern for family members was paramount for employee response and attendance at the workplace.

Data collected from a MCFD internal survey provided mixed results when compared to national trends and literature sources. A majority of staff stated they would report for their normally-scheduled duty, despite personal risk during a pandemic emergency and would respond for mandatory overtime if the situation presented itself. Also, three-quarters of staff members

stated they would be willing to take extra duty assignments for overtime pay. When staff were asked if they perceived themselves at personal risk when treating patients during a pandemic, only one employee stated they did not, while a clear majority stated they would treat the same patient if they were forced to by their employer, despite the perceived risk. Participants also were more than receptive to long periods in personal protective equipment, including breathing apparatus or filtered devices.

When specific family issues were introduced into the equation, a similarity to national trends and literature sources was identified. As participants were asked if they would report for work with ill family members at home, almost three-quarters of staff stated they would *not* come to work. Furthermore, half of the employees stated they would refuse to stay away from family members while quarantined at their duty station. When staff members were presented with alternatives to being away from family during a pandemic, numbers decreased. Possible solutions to separation from family, such as housing family members at the duty station with the employee or transporting family to a secure location free from the effects of a pandemic proved to lessen employee absenteeism, boosting staffing rates over 80% should such provisions occur.

When departments were asked how a pandemic would affect operations and what their level of preparedness was within their organization, only one-quarter of departments had formal pandemic plans in place, while the majority had attended some type of formal pandemic emergency planning. Less than half of the departments had a cache of personal protective equipment specifically identified for use during a pandemic, and half of respondents stated they had provisions in place to deal with acute staffing shortages. When asked if the departments had identified key infrastructure to assist with emergency resources, slightly over ten percent stated they had. Following on the heels of identifying that staff were more agreeable to attend work if

certain accommodations were made to secure family members, half of the departments stated they had facilities that would accommodate staff only for an extended period of time, and only one department had sufficient facilities to house staff members and their families at the same facility.

As departments were asked how a pandemic would affect their daily operations, and what measures they would take to assure continuity of operations within their department, a myriad of responses ensued. Almost ninety percent of departments stated that a significant hardship would occur, and the most common solution to remaining in operation required departments to eliminate non-essential services such as fire prevention activities and inspections, and would respond to all automatic fire alarms with single engine companies, instead of multiple company response. Departments that provided out-of-town interfacility ambulance transport stated they would remain within their response area and would suspend any trips out of town, keeping crews busy with emergencies. An interesting solution to continuity of operations was identified by several departments, with one-third of respondents stating they would provide only defensive operations and exposure protection to structure fires that were identified as being vacant prior to their response.

Interview findings suggested that only minimal provisions for staffing replacement of mission-critical personnel were in place. This supports literature, suggesting that all employers will be faced with similar staffing shortages during a pandemic and resources will either be extremely limited or unavailable. Emergency managers have investigated the potential for retired medical workers that still maintain credentials to assist emergency responders, but no formal contingencies have been developed for this role. An effort has been made with local legislators to allow emergency care providers to function outside of their scope of practice during

a pandemic emergency. This seems a viable solution to enhancing the skill capabilities of present rescue and emergency care staff, but given the time commitments and the difficulties associated with legislation, despite good intentions, the effort could be problematic. Efforts to adapt legislation for scenarios such as a pandemic emergency could potentially affect other responder roles during any multiple casualty incidents, and perhaps if the legislation includes this caveat, it would stand a better chance for success. Local public health authorities and emergency managers shared a common thread, stating that they both realize the potential for a catastrophic result from a pandemic, and several measures would have to be instituted to deal with such an event, identifying unavailable mutual aid resources, medical facilities with unrealistic surge problems and local infrastructure collapse. Some provisions have been made locally to keep the emergency departments open at local hospitals by diverting triage to field sites and local schools. Public health has identified community partners that will play an important role in community response during a pandemic, and a line of communication has been maintained between the two entities. Cero Gordo County can be very proud of the hard work that their emergency management and public health department has accomplished, and its population base can be assured that it is well served by their efforts. The entire *scope* of a pandemic emergency must be taken into account, however, and realization of the tremendous hardship posed by such an event must be appreciated.

The general feel for the research was that while local research supports national trends and literature sources, certain anticipated differences were noted. It appears that planning is ongoing locally and regionally, but perhaps department specific planning needs to occur to address specific issues. In addition, certain assumptions were made and limitations encountered during the research. First, sources encountered during the literature review must be assumed to have

done their own specific research and shared their individual research in their documents. The surveys that were distributed to each MCFD employee during the internal MCFD survey were presumed to be completed individually and without bias or influence. Secondly, there was some misunderstanding regarding questions 4 and 5. Several survey respondents did not provide an answer for question 5, because they stated a “yes” response to question 4. During the external survey, a total of only 8 departments were available by phone, and the remaining two departments did not respond despite several attempts by phone. Also, during the phone survey, it was assumed that the respondent had a thorough knowledge of the department’s provisions for dealing with a pandemic emergency. Finally, the research is somewhat limited in scope and cannot be assumed to be all inclusive. Departments and individuals may have been inaccurate depending on each department’s policies and procedures. Information was obtained by individual members of each department and may not accurately reflect the opinion of the department as a whole.

Recommendations

The following recommendations for the Mason City Fire Department can be made based on the research completed in this project. The following recommendations are not intended to be presented in any particular order, nor are they all-inclusive and regarded as an indisputable solution to the research problem. The recommendations are merely a proposal to MCFD administration and agreeable portions can be considered to provide assistance to administrators in dealing with the challenges identified in this research.

As stated throughout the research, the pandemic is an inevitable and possible imminent threat to the United States, but more specifically, Mason City and Iowa. Several issues need to be addressed to methodically and comprehensively deal with the likelihood of a catastrophic result to a pandemic in north-central Iowa. The author would like to respectfully recommend the following to the MCFD administration:

As demonstrated in the research, a pandemic may occur any day. It is apparent that a tremendous hardship and even catastrophic results can follow a pandemic in the MCFD response area. The lack of a comprehensive operations plan to deal with such an emergency places the Mason City Fire Department at a significant risk. With that being said, the author would recommend that the resources be made available to construct a viable working draft of an operations plan to deal with a pandemic within the next ninety days. By developing a timeline and placing an emergent emphasis on the project, the likelihood of successful completion of a rough draft document, outlining operational procedures and guidelines for MCFD command staff and suppression staff to follow in the event of a pandemic is likely to be successful. This timeline will also allow ample time to bring all of the local key officials into play and ensure buy-in from the appropriate entities.

It is reasonable to develop a line of communication between local and regional representatives that would be instrumental in achieving success with a planning initiative. A local representative from the state congress could share ideas and visions from their perspective, as well as state department of public health and emergency medical services representatives. Secondly, state department of agriculture staff, along with department of public safety authorities could lend possible ideas and solutions. Regional emergency management planners, response agency representatives, hospital administration staff, fire and EMS command staff and perhaps

experts in epidemiology from local colleges and universities could be valuable in setting goals and sharing their specific concerns. Finally, at the local level, city and county planners, emergency management staff, public health staff, school administrators, funeral directors, fire, EMS, law enforcement and representatives from business and local infrastructure should be present to discuss issues from a local perspective. It would seem appropriate to include many of the same people that would be represented in the local emergency operations center (EOC) to participate in the planning. Also appropriate would be local volunteer service groups, especially those that deal with emergency operations, such as the American Red Cross, Salvation Army, community emergency response teams and search and rescue groups, including the Civil Air Patrol.

It appears that specific planning regarding employee absenteeism and staffing shortages during a pandemic emergency has not been sufficiently addressed, especially at the MCFD level. Therefore, following preliminary meetings with the aforementioned representatives and data collection from their specific viewpoints and recommendations, the MCFD command staff should be tasked with the development of an operational plan to deal with staffing issues during a pandemic. Utilizing research findings generated in Mason City and across Iowa, this plan can include proposed answers to specific responses to the indigenous staff in Mason City, as well as answer the appropriate questions regarding the continuity of operations at MCFD, while enduring staffing shortages. Upon the formation of a draft proposal, it should be shared with line officers, as well as a sub-group of the initial members of the planning committee.

It seems reasonable that the planning for a pandemic should occur at fire department headquarters in Mason City. The meeting rooms are more than sufficient to accommodate the necessary representatives attending the planning sessions, and this would be a potential site for

emergency operations should a pandemic occur. This setting will also allow those not familiar with operations or capabilities of MCFD to see firsthand what those capabilities are. Finally, the department setting will allow all line officers to attend the meeting while remaining ready to respond on apparatus during the duty day. Catered meals and refreshments would ensure that continuity would occur regarding attention to the planning process, and would keep interruptions at a minimum.

Lastly, the construction of the operations plan remains critical to the success of the venture. All factors should be taken into account, and the questions listed on both the internal and external survey could serve as a starting point regarding planning issues and discussion points. The plan should be realistic and implementation should fall within departmental budget guidelines and capital improvement appropriations. For example, if additional facilities are recommended by the operations plan to house staff and family members, MCFD may have to seek additional funding, or even approach grant funding sources. Specific guidelines need to be written into operational policies and procedures regarding response during a pandemic, including fire suppression, prevention, inspection services and EMS. Additionally, guidelines need to be in place to deal with requests for out-of-town transports of patients and should be part of a discussion with hospital staff and physicians. Provisions for storage and maintenance of a limited supply of personal protective equipment can also be addressed, and the fit testing of such devices as N-95 masks should begin immediately, not only for pandemic response but other airborne exposure as well.

It is important to realize that Cerro Gordo County has done a great deal of preparation regarding pandemic response, and local public health seem to have their finger on the pulse of the pandemic. This coupled with impressive pandemic mitigation efforts by local emergency

management authorities have compiled a county pandemic response plan that is second to none, and has incidentally been used as a template by other agencies across the country. With a resource such as this, it seems foolish to try to reinvent the wheel but perhaps expand on the preparation that has already occurred. It is the compilation of all of the preparation already in place, with specific modifications to serve the Mason City Fire Department, that will best serve the citizens within the MCFD response area when a pandemic emergency occurs.

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Appendix A

MCFD Influenza Pandemic Survey

1. If a pandemic occurred in Mason City, would you report to work?
2. If you were “off-shifted”, would you report to work?
3. If you had family members at home that were ill, would you report to work?
4. If a pandemic lasted for several weeks, would you be willing to remain at the fire station in quarantine, away from your family?
5. If you answered NO to question 4, would you stay at the fire station if your family members were at the same location?
6. If the patient that you were treating was suspected of having the Avian flu, would you treat them?
7. Would you wear personal protective equipment, including self-contained breathing apparatus, for extended periods of time during a pandemic?
8. If you have children, would the availability of a secure location (free from pandemic danger) make the difference between reporting to work or not?
9. Would you complete extra overtime shifts during a pandemic?
10. Do you perceive yourself at personal risk while treating patients with influenza during a pandemic?

Appendix B

MCFD Pandemic Scenario

- The Avian Flu, or H5N1, is a type of influenza that carries over a 50% mortality rate.
- Cerro Gordo County could potentially see a large amount of life loss from a pandemic.
- Middle age adults will be at risk from H5N1.
- The World Health Organization stated that a pandemic is “immanent”.
- Local infrastructure, such as transportation, retail, etc. will collapse during a pandemic.
- Employees will be asked to stay home and work, and schools will close.
- Quarantine areas will be set up, and infected citizens will be confined.
- The pandemic will come in a series of waves, each lasting weeks or months.
- Law enforcement will use whatever force is necessary to keep the peace.

Appendix C

MCFD External Survey

1. Does your department have a response plan in place for a pandemic emergency?
2. Has your department ever participated in formal preparedness training for a pandemic?
3. Would you expect staffing shortages during a pandemic emergency?
4. Does your department have a mandatory call-in system to maintain staffing during an emergency? If so, would you consider using this system during a pandemic?
5. Does your department maintain communication with your local public health department regarding pandemic emergencies and planning?
6. Does your department maintain an inventory of PPE to deal with a pandemic?
7. Does your department, or your city government, have strategies in place in case of staffing shortages of critical personnel?
8. How would a staffing reduction of 30-40% affect daily emergency operations in your department?
9. Has your department identified key infrastructure locally to utilize for continuity of emergency operation during a pandemic, such as food, fuel, personal items, etc.?
10. Do you have facilities available to house your entire staff for several weeks while quarantined? How about housing family members of staff as well?

Appendix D

Osterholm Fact Sheet

Ron Osterholm

Health Director of the Cerro Gordo County Department of Public Health.

- 24 years in the professional field of public health.
- Hired in 1988 by the Cerro Gordo County Board of Health to develop an environmental health program.
- In 1990, appointed Health Director of the newly created health department.
- Leader of public health issues on the national, state and local level.
- Iowa Homeland Security 1st Responder Advisory Committee;
- Focus Group Member,
- Center for Disease Control and Prevention, Public Health Emergency Response Guide;
- Academic Advisory Committee, Public Health Masters Program, Des Moines University – Osteopathic Medical Center.
- National Association of County and City Health Officials Bioterrorism and Emergency Preparedness Committee; Columbia University, Center for Public Health Policy and Health Service Research,
- Local Public Health Competence for Emergency Response
- Past-President of the Iowa Environmental Health Association.
- Chair, Iowa State Association of Counties, Environmental and Public Health Legislative Steering Committee and
- Iowa Environmental Health Association Legislative Committee.

Appendix E

Osterholm Interview Question

1. Please describe what other community resources can be accessed locally to compensate for a shortage of mission-critical personnel during a pandemic catastrophe?

Appendix F

O'Neil Fact Sheet

Steven O'Neil

Director, Cerro Gordo County Emergency Management

- Director, Franklin County Emergency Management
- Member, Iowa Emergency Management Association
- Certified Emergency Manager
- Emergency Medical Technician-Basic
- Past Fire Chief, Manly Fire Rescue
- Community Emergency Response Team (CERT) Manager

Appendix G

O'Neil Interview Questions

1. Please describe what other community resources can be accessed locally to compensate for a shortage of mission-critical personnel during a pandemic catastrophe?
2. How do you feel a pandemic could affect emergency operations at MCFD?
3. How will reliance on federal, state and regional agencies be affected by a pandemic?
4. What local infrastructure resources have been identified to increase staffing and logistics during a pandemic?